

Electrostatic Levitation for Studies of Additive Manufacturing Materials for Extreme Environments

Authors: Michael SanSoucie, Robert Hyers, Jan Rogers

The electrostatic levitation (ESL) laboratory at NASA's Marshall Space Flight Center (MSFC) is a national resource for researchers developing advanced materials for new technologies. Researchers have used MSFC's ESL Laboratory to develop advanced high-temperature materials for aerospace applications, coatings and structural materials for rocket nozzles, improved medical and industrial optics, metallic glasses, ablatives for reentry vehicles, and materials with memory.

Modeling of additive manufacturing materials for extreme environments is necessary for the control of their resulting materials properties. Unfortunately, there is very little materials properties data for many Additive manufacturing materials, especially of the materials in the liquid state.

The MSFC ESL lab is ideal for the study of additive manufacturing materials To be used in extreme environments. The lab can provide density, surface tension, and viscosity of molten materials, emissivity measurements, and even creep strength measurements.